Florida Power & Light Company, 6501 South Ocean Drive, Jensen Beach, FL 34957

October 14, 2002

L-2002-195
10 CFR § 50.73

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Re: St. Lucie Unit 2
Docket No. 50-389
Reportable Event: 2002-002-00
Date of Event: August 19, 2002
As-Found Cycle 12 Pressurizer Safety Valve
Setpoints Outside Technical Specification Limits

The attached Licensee Event Report 2002-002 is being submitted pursuant to the requirements of 10 CFR § 50.73 to provide notification of the subject event.

Very truly yours,

Donald E. Jernigen
Vice President
St. Lucie Nuclear Plant

DEJ/KWF
Attachment

IE22

NRC FORM 366 (1-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2001

Estimated burden per response to comply with this mandatory information collection request 50 hrs Reported lessons learned are incorporated into the licensing process and fed back to industry Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U S Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503 If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
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TITLE (4)

As-Found Cycle 12 Pressurizer Safety Valve Setpoints Outside Technical Specification Limits

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
08	19	2002	2002	- 002	- 00	10	14	2002	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	1
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more) (11)

20.2201(b)		20 2203(a)(3)(ii)		50 73(a)(2)(ii)(B)	50 73(a)(2)(ix)(A)
20 2201(d)		20.2203(a)(4)		50 73(a)(2)(iii)	50 73(a)(2)(x)
20.2203(a)(1)		50 36(c)(1)(i)(A)		50 73(a)(2)(iv)(A)	73 71(a)(4)
20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50 73(a)(2)(v)(A)	73 71(a)(5)
20.2203(a)(2)(ii)		50 36(c)(2)		50.73(a)(2)(v)(B)	OTHER
20.2203(a)(2)(iii)		50 46(a)(3)(ii)		50 73(a)(2)(v)(C)	Specify in Abstract below or in NRC Form 366A
20 2203(a)(2)(iv)		50 73(a)(2)(i)(A)		50.73(a)(2)(v)(D)	
20 2203(a)(2)(v)	X	50 73(a)(2)(i)(B)		50.73(a)(2)(vii)	
20 2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50 73(a)(2)(viii)(A)	
20 2203(a)(3)(i)		50 73(a)(2)(ii)(A)		50 73(a)(2)(viii)(B)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Kenneth W. Frehafer, Licensing Engineer	(772) 467 - 7748

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	AB	RV	C170	NO	-	-	-	-	-

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO				

ABSTRACT (Limit to 1400 spaces, i e , approximately 15 single-spaced typewritten lines) (16)

On August 19, 2002, St. Lucie Unit 2 was in Mode 1 at approximately 100 percent reactor power. Wyle Labs informed FPL of unsatisfactory test results for two of the three code pressurizer safety valves removed during the Cycle 13 refueling outage. Wyle Labs was contracted to perform the offsite pressurizer safety valve testing and the testing was conducted within the required time restraints.

Technical Specification 3.4.2.2 requires the as-found setpoints of the pressurizer safety valves to be ≥ 2435.3 psig and ≤ 2535.3 psig. The as-found settings of two St. Lucie Unit 2 pressurizer safety valves were 2.37 and 3.66 percent high, outside the Technical Specification tolerance limit of +/- 2 percent.

The cause of the failed pressurizer safety valve tests was due to valve spring performance issues and mechanical setpoint drift over the operating cycle.

There is no past or present operability concern as the subject pressurizer safety valves were removed and replaced with pre-tested valves during the St. Lucie Unit 2 Cycle 13 refueling outage. There was no affect on the health and safety of the public during past St. Lucie Unit 2 Cycle 12 power operations because the limiting overpressure analyses remain bounding for the as-found condition.

Description of the Event

On August 19, 2002, St. Lucie Unit 2 was in Mode 1 at approximately 100 percent reactor power. Wyle Labs informed FPL of unsatisfactory test results for two of the code pressurizer safety valves (PSVs) [EIIS:AB:RV] removed during the Cycle 13 refueling outage.

In accordance with the inservice testing (IST) program, pressure relief devices are tested per ANSI/ASME OM-1987, Part 1, "Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices." Section 1.3.3, "Test Frequency, Class 1 Pressure Relief Devices," of the code requires testing within 12 months of removal from service when the surveillance requirements are satisfied by installing a full complement of pre-tested valves. Wyle Labs was contracted to perform the testing and the testing was conducted within the required time restraints.

Technical Specification 3.4.2.2 requires the PSVs to lift at 2500 psia (+/- 2 percent). The as-found settings of two of the Unit 2 PSVs were outside the Technical Specification tolerance limit of +/- 2 percent. As shown below, the deviation was 2.37 and 3.66 percent high for the two failed valves.

Valve	Serial Number	Set Pressure	Acceptable Range	As-found Set Pressure	Result
V1202	N84217-00-0002	2500 psia	2435.3-2535.3 psig	2544 psig	+2.37%
V1200	N84217-00-0006	2500 psia	2435.3-2535.3 psig	2576 psig	+3.66%

No present operability concern exists, as the PSVs were all removed and replaced with pre-tested valves during the St. Lucie Unit 2 Cycle 13 (SL2-13) refueling outage under work orders (WO) 30023161, 30023162, and 30023163.

Cause of the Event

ANSI/ASME OM-1987, Part 1, code requires a cause determination and corrective actions for any safety or relief valve that exceeds its nameplate setpressure by 3 percent or greater. The As Found setpressure of Unit 2 PSV V1200, S/N N84217-00-0006, was 2576 psig. This is 3.66 percent above the nameplate 2485 psig setting. Following the as-found (first test) failure and prior to disassembly, additional tests were conducted to evaluate the valve's health and actual setting. The second and third test results were 2522 and 2548 psig respectively. These tests were performed immediately following the as-found test with no adjustments to the valve. Historically, after exercising the valve, setpoint drift is no longer present and the setting is at or near the expected value. This did not occur as shown by the second and third data points and implies that a hardware problem existed.

The valve was then disassembled and inspected by Crosby, the OEM vendor. The visual inspection did not identify any wear or other hardware concerns. All of the load bearing surfaces, contact points, and internal guides were satisfactory. The valve was dimensionally verified against Crosby design drawings and found to be acceptable. No hardware problems were found that would cause the high setting.

Based on the results of the valve inspection, the most likely cause for the surveillance failure was performance problems with the valve spring. A review of past surveillance data revealed that this valve failed high in 1999. Crosby, the OEM vendor, concluded that the spring assembly needed to be replaced. This work was

performed and the valve was re-certified on August 1, 2002. No abnormalities were identified during the As-left testing.

The as-found setpressure for V1202, S/N N84217-00-0002, was 2544 psig, or 2.37 percent above the nameplate 2485 psig setting. The valve had not failed high in previous tests. The apparent cause for the failure to meet the Technical Specification surveillance requirements is setpoint drift. The spring was replaced as a prudent measure and the valve was successfully re-certified.

Analysis of the Event

FPL reviewed NUREG-1022, Revision 1, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," and determined that this event is reportable under 10 CFR 50.73(a)(2)(i)(B) as "any operation or condition prohibited by the plant's Technical Specifications." Although discrepancies found in Technical Specification surveillance tests should be assumed to occur at the time of the test, the existence of multiple sequential test failures involving safety valves may be an indication that the discrepancies arose over a period of time. Therefore, the condition may have existed during plant operation.

Analysis of Safety Significance

An engineering assessment of the accident analysis was performed to determine if the setpoint deviations could have led to the violation of overpressurization limits during the operation of Cycle 12. The assessment performed here accounts for the effects of main steam safety valves (MSSVs) setpoint deviations found at the end of Cycle 12 and reported by LER 50-389/2001-002-00.

The function of PSVs in the safety analysis is to mitigate the consequences of overpressurization events to limit the peak pressure below the acceptance limits. The limiting overpressurization events are in the category of "Decrease in Heat Removal by the Secondary System." The limiting events in this category, pertaining to deviations in PSV setpoints, are the Feedline Break and the Loss of Condenser Vacuum. In addition to these "Decrease in Heat Removal" events, PSV setpoints are used as input in the analysis of the CEA Withdrawal (CEAW) event. The key parameter inputs (other than PSV and MSSV setpoints that are discussed below) used in the analyses of these events bound the values for Cycle 12. LER 50-389/2001-002-00 concluded that the deviations in the as-found MSSV setpoints had no adverse impact on the safety analysis results.

CEAW

The current analysis of the CEAW event assumes the opening of the PSVs at 2500 psia + 3 percent tolerance. CEAW event is not limiting with respect to the RCS pressure and the fact that the RCS pressure in the analysis does not reach this analysis value for valve opening pressure of 2575 psia concludes that this event analysis remains bounding for the as-found PSV conditions. This conclusion is valid even after taking into account the MSSV set pressure deviations as reported by LER 50-389/2001-002-00.

Feedline Break

The Feedline Break analysis of record used a conservative PSV setpoint of 2575 psia and showed acceptable results with respect to the overpressurization criteria for primary and secondary systems. Since the average as-found setpressure of the PSVs was 2544 psia (<2575 psia), the results of the current analysis bound the Cycle 12

operation with these as-found setpoints. (A lower PSV setpoint would open the valves earlier helping in the mitigation of the overpressurization event.)

Loss of Condenser Vacuum

This is the limiting pressurization event for St. Lucie Unit 2. The loss of condenser vacuum analysis of record used a PSV setpoint of 2550 psia (a 2 percent tolerance) and showed acceptable results with respect to the overpressurization criteria for primary and secondary systems. Since the average as-found setpressure of the PSVs was 2544 psia (<2550 psia), the current analysis remains bounding for the as-found setpressure condition of the PSVs. This conclusion is valid even after taking into account the MSSV set pressure deviations reported by LER 50-389/2001-002-00.

Conclusion

Based on the evaluation performed, it is concluded that no safety analysis limits would have been violated for any of the FSAR analyzed events during the operation of Cycle 12. The operation of Cycle 12 would have remained within the design basis of the plant.

Generic Implications

The spring concern is only applicable to both units PSV and the spare valves because no other valves use this same spring. The IST and relief valve planned maintenance programs monitor the health of other safety and relief valves. All three PSVs are replaced each outage in accordance with the PM program to minimize aging and setpoint drift concerns. All nine valves (three per unit and three spares) are closely monitored and the setpoints trended due to their importance. FPL determined that the installed PSVs on both units could reasonably accommodate the historical setpoint drift data reviewed.

Corrective Actions

1. The refurbishment and re-testing of the valves removed from Unit 2 during SL2-13 were completed.
2. The spring assemblies for valve S/Ns N84217-00-0002 and N84217-00-0006 were replaced.

Additional Information

Failed Components Identified

Component: pressurizer safety valve

Manufacturer: Crosby

Model: HB-86-BP, forged block body design, size 3K6, assembly N84217

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TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

Similar Events

LER 50-389/2000-004-00, "As-Found Cycle 11 Pressurizer Safety Valve Setpoints Outside Technical Specification Limits."

LER 50-389/2001-002-00, "As-Found Cycle 12 Main Steam Safety Valve Setpoints Outside Technical Specification Limits."